
Activin A and BMP4 Signaling for Efficient Cardiac Differentiation of H7 and H9 Human Embryonic Stem Cells.

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Public Summary:

The generation of cardiomyocytes from human embryonic stem cells (hESC) enables a variety of potential therapeutic and diagnostic applications. However, progress is challenged by the low efficiency of cardiomyocyte differentiation. Recently, Kattman et al., 2011 showed that individual hESC lines required proper balance of the Activin A and BMP4 signaling for efficient cardiac differentiation, presenting their differentiation protocols for several human and mouse ESC lines. However, two of the most utilized hESC lines, H7 and H9, were not included. Therefore, we set out to verify the published methodology for highly efficient cardiac specification and investigate the cardiac differentiation in the H7 and H9 ESC lines. Our studies examined a range of time points for the initial culture of hESC as embryoid bodies (EB) prior to transfer to monolayer culture, as well as, concentrations of Activin A and BMP4 in the medium formulations. The results highlight an efficient protocol for reproducibly generating cultures with approximately 50% cardiomyocytes from H7 and H9 ESC lines.

Scientific Abstract:

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